

## CLAIMS

1. A method of detecting a fault in a joint connecting sections of an electrical transmission line together, said method comprising: measuring the resistance to current  
5 flowing through said joint in one and the other directions along said electrical transmission line and detecting a fault in said joint if the measured resistance differs substantially in said one and the other directions.
2. A method according to claim 1, further comprising applying said current to said  
10 electrical transmission line.
3. A method according to any preceding claim, wherein said electrical transmission line comprises a pair of electrical conductors and said method further comprises the antecedent step of connecting said electrical conductors together.  
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4. A method according to claim 3, further comprising connecting said electrical conductors together by applying a resistive load between said conductors.
5. A method according to claim 4, further comprising remotely controlling a  
20 termination device to apply said resistive load between said conductors.
6. A method according to claims 4 or 5, wherein said resistive load has a resistance of less than  $600\Omega$ .
- 25 7. A method according to claim 6, wherein said resistive load has a resistance of  $0\Omega$  to  $10\Omega$ .
8. A method according to any preceding claim, wherein said electrical transmission line comprises a transmission line in a telecommunications network.  
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9. A method according to claim 8, wherein said transmission line extends between a telephone exchange and a customer's premises.
10. A method according to claim 9, further comprising applying said current at said  
35 telephone exchange and applying said resistive load at said customer's premises.

11. A method according to claim 10, wherein said termination device is situated in said customer's premises.
- 5 12. A method according to claim 10, further comprising applying said resistive load at said telephone exchange and applying said current at a point between said telephone exchange and said customer's premises.
13. A method according to claim 12, further comprising applying electric current at  
10 said customer's premises.
14. A method according to any of the preceding claims, further comprising applying a direct current to said electrical transmission line.
- 15 15. A method according to claim 14, further comprising detecting the condition of said joint by:  
measuring the electrical resistance of said transmission line;  
reversing the direction of said direct current;  
re-measuring the electrical resistance of said line; and  
20 detecting a dependence in electrical resistance of said electrical transmission line upon the direction of flow of said direct current.
16. A method according to claim 15, further comprising detecting deterioration of said joint by detecting a change in electrical resistance greater than a predetermined threshold.  
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17. A method according to claim 16, wherein said predetermined threshold value is between  $5\Omega$  and  $10\Omega$ .
18. A method according to any of claims 1 to 13, further comprising applying an  
30 alternating current to said electrical transmission line.
19. A method according to claim 18, further comprising detecting a change in electrical resistance of said electrical transmission line by detecting rectification of said alternating current.

20. A method of testing an electrical transmission line by carrying out a sequence of tests, wherein one of said tests comprises detecting a fault in a joint connecting sections of said electrical transmission line together according to the method of any preceding claim.

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21. A method according to claim 20, wherein said sequence is arranged such that said test to detect a fault in said joint is carried out after:

a) a test to check for connectivity between end points of said electrical transmission line indicates that said connectivity exists; and

10 b) a test to check whether said electrical transmission line is in contact with earth and/or another electrical transmission line indicates that no such contact exists.

22. A method according to claim 21, wherein said end points are a telephone exchange and a customer's premises.

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23. Apparatus for detecting a fault in a joint connecting sections of an electrical transmission line together, said apparatus comprising means for measuring the resistance to current flowing through said joint in one and the other directions along said electrical transmission line; and means for detecting a fault in said joint if the measured resistance  
20 differs substantially in said one and the other directions.

24. Apparatus according to claim 23, further comprising means for applying said current to said electrical transmission line.

25 25. Apparatus according to any of claims 23 to 24, wherein said electrical transmission line comprises a transmission line in a telecommunications network comprising a pair of electrical conductors.

26. Apparatus according to claim 25, wherein said apparatus further comprises  
30 means for controlling a termination device installed between said conductors, said termination device being operable to connect said electrical conductors together with a resistive load.

27. Apparatus according to claim 26, wherein said transmission line extends between  
35 a telephone exchange and a customer's premises.

28. Apparatus according to claim 27, wherein said termination device is situated in said customer's premises.

5 29. Apparatus according to any of claims 24 to 28, wherein said electric current is a direct electric current.

30. Apparatus according to any of claims 24 to 28, wherein said electric current is an alternating electric current.

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31. Apparatus for detecting a fault in a joint connecting sections of an electrical transmission line together, said apparatus comprising a measurer operable to measure the resistance to current flowing through said joint in one and the other directions along said electrical transmission line; and a detector operable to detect a fault in said joint if the  
15 measured resistance differs substantially in said one and the other directions.

32. Apparatus for testing an electrical transmission line comprising:

a connectivity tester operable to test the connectivity between end points of the electrical transmission line and to indicate when said connectivity is present;

20 a contact tester operable to test for contact between said electrical transmission line and earth and/or another electrical transmission line and to indicate when there is no such contact;

a joint fault detector according to the apparatus of any of claims 23 to 31 operable to detect a fault in a joint in response to an indication from said connectivity  
25 tester that said connectivity is present and from said contact tester that no such contact exists.